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100 GROVE ST. | WORCESTER, MA 01605

June 5, 2017

JUN - 5 2017

Joseph Laydon
Town Planner
Grafton Municipal Center
30 Providence Road
Grafton, MA 01519

**PLANNING BOARD
GRAFTON, MA**

T 508-856-0321

F 508-856-0357

gravesengineering.com

**Subject: Fieldstone Farms (aka Meadow Lane)
Retaining Wall Replacement Plan Review**

Dear Joe:

We received the following document on May 10, 2017:

- Plans entitled Retaining Wall Replacement Located at Meadow Lane, Grafton, MA dated April 10, 2017, prepared by Land Planning, Inc. for Magill Associates, Inc. (2 sheets)

Graves Engineering, Inc. (GEI) has been requested to review and comment on the plans' consistency with the definitive plans dated February 1, 1994 and last revised November 21, 1994, consistency with the retaining wall replacement goals set in 2012, and standard engineering practices. As part of this review, GEI visited the site on June 2, 2017.

Our comments follow:

1. The plans do not show the existing stone/boulder wingwalls located at the ends of the existing gabion retaining walls. The plans need to clarify how the proposed retaining walls will tie into the existing wing walls.
2. The "Culvert Through Wall Section" on Sheet 2 of the plans proposes only six inches of concrete around the culvert pipe and mislabeled the culvert pipe as "RCP" instead of "HDPE." We are concerned about the load being placed onto the HDPE culvert. A reinforced concrete lintel of sufficient strength needs to be designed to span each of the three culvert penetrations, and the mislabeling of the pipe material needs to be corrected.
3. Information available from the wall block manufacturer indicates that guard rail posts are to be set in a grout-filled Sonotube with a minimum embedment of five feet. The plans propose direct-burial posts embedded only 41" into the ground. The plans need to be revised to meet or exceed the manufacturer's recommendations.
4. The wall section construction details on Sheet 2 show the base blocks having grooves in their bottom (these are middle blocks) instead of having a flat bottom (base blocks). The construction details must be revised to show base blocks.
5. On Sheet 1, the individual blocks weren't labeled on the two retaining wall elevations. Standard practice for wall systems such as the one proposed is to label the block type (e.g. 60B, 60M, 45M, 24T) of each block to avoid confusion during construction. For example, there are sections of the walls that require nine courses adjacent to sections that require ten courses, each of which requires different base blocks.

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6. On Sheet 2, Note II.B, II.G and E.1 refer to geogrid. However, geogrid is not proposed elsewhere on the plans; the design is for a gravity wall instead. The references to geogrid are confusing and should be deleted.
7. The retaining wall is available in various textures. The plans do not propose a texture; we recommend that the design engineer coordinate a texture with the Planning Board.
8. GEI did not perform a structural engineering peer review of the proposed replacement wall. Such a review is beyond the scope of this general civil engineering peer review.

We trust this letter addresses your review requirements. Feel free to contact this office if you have any questions or comments.

Very truly yours,
Graves Engineering, Inc.



Jeffrey M. Walsh, P.E.
Vice President

cc: Norman Hill, P.E., P.L.S.; Land Planning, Inc.